Touring series

User Manual

M12T
M14T
M15T
M30T
M118T
M181T
M182T
M218T
M1201T
M1502T

Mach

Revision D

Printed in Denmark.

DESIGN CONCEPT

The Touring Series consists of two product types: the SlingShot series with 55° x 35° dispersion for long throw applications, and the T series with 55° x 45° dispersion for medium throw applications. Both types have the same horizontal dispersion, but the T series has greater dispersion in the vertical plane, making them ideal for down-fill applications in combination with SlingShots or as stand-alone boxes in applications where a wider vertical dispersion is desirable to address sloping audience areas. This manual applies to the T series.

The T series is designed to be used with any quality amplification equipment. There is no need for special processors. The design philosophy is that acoustic problems are best solved with acoustic solutions. As the most powerful processor cannot correct even basic acoustic problems, there is no substitute for the quality of an acoustically well designed speaker.

For this reason, all drive units have been developed with emphasis on ultra flat frequency response, highly controlled dispersion patterns and very low distortion. In addition, power compression has been kept to an absolute minimum.

- The M12T and M15T are full range boxes that work well without support from subwoofers.
- The M14T and M30T are dedicated top-boxes with a roll-off at around 70 Hz, but with extremely high output above this frequency.
- The M118T, M181T, M182T and M218T are sub-woofers.
- The M1201T and M1502T are full-range boxes designed for monitor applications.

PASSIVE MODE (INTERNAL CROSSOVER)

All models in the T-series are supplied in passive mode. In this mode, they are connected through the 1+/1- pins on the Speakon® plug, and the signal from the amplifier is fed to the passive internal crossover.

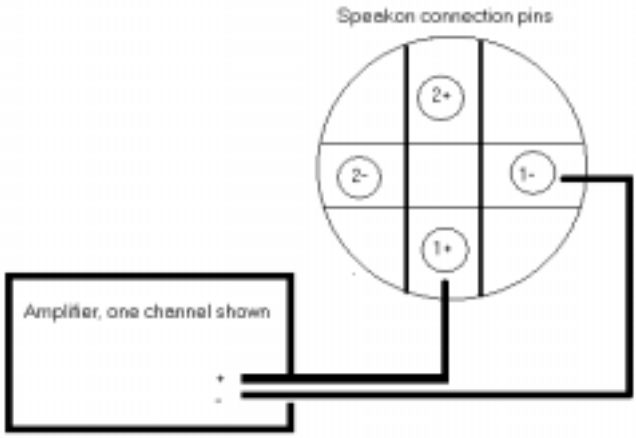
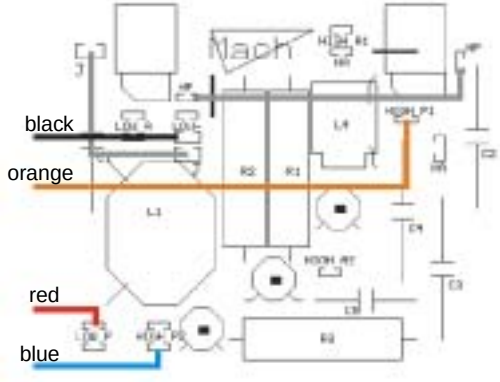


Figure 1: Default pin configuration (Passive Mode)

The internal crossover is located directly behind the Speakon® terminal. In passive mode operation, the crossover for all full-range models except the M14T is wired as shown below (crossover wiring for the M14T is shown on the next page):

M12T, M15T, M30T, M1201T, M1502T IN PASSIVE MODE:

- Red (Woofer +) to LOW P
- Black (Woofer -) to LOW -
- Orange (Tweeter +) to HIGH P1
- Blue (Tweeter -) to HIGH P2
- Jumper between HP and HP
- Jumper between J and J



M14T IN PASSIVE MODE:

The M14T crossover is wired as shown below:

- Red (Woofer +) to LOW P
- Black (Woofer -) to LOW -
- Orange (Tweeter +) to HIGH P2
- Blue (Tweeter -) to HIGH P1
- Jumper between HP and HP
- Jumper between J and J

ACTIVE MODE (EXTERNAL CROSSOVER)

In active mode, low and high frequency signals from an external crossover are connected directly to woofers via the 1+/1- pins and compression drivers via the 2+/2- pins on the Speakon plug.

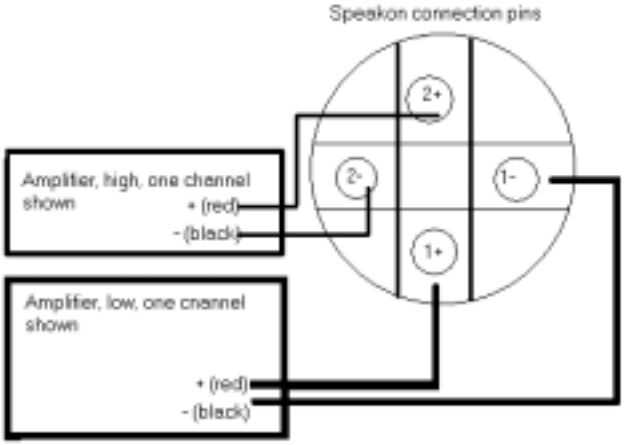


Figure 2: Active mode pin configuration

ACTIVE MODE WIRING (ALL FULL-RANGE MODELS)

To run speakers in active mode, the internal crossover on all speakers must be rewired as shown below:

- Red (Woofer +) to LOW A
- Black (Woofer -) to LOW -
- Orange (Tweeter +) to HIGH A2
- Blue (Tweeter -) to HIGH A1
- Jumper between HA and HA
- Remove jumper between J and J.

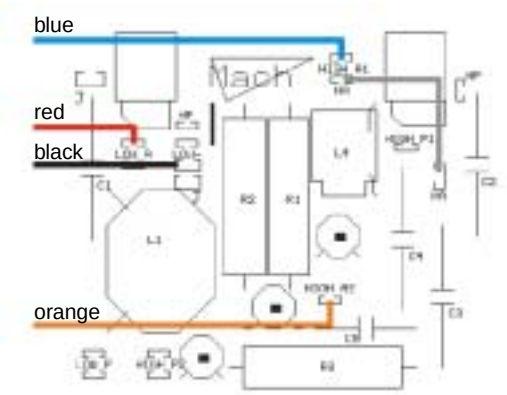


Table 1: Active mode specifications

Model	Driver throat	Power handling IEC 268	Impedance	Crossover point	Polarity
M12T	2"	125 watt	16 ohm	1.3 kHz[a]	Inverted
	12"	400 watt	8 ohm		Normal
M14T	2"	150 watt	16 ohm	1.4 kHz[b]	Normal
	15"	400 watt	8 ohm		Normal
M15T	2"	125 watt	16 ohm	1.3 kHz	Normal
	15"	500 watt	8 ohm		Normal
M30T	2"	125 watt	16 ohm	1.3 kHz[c]	Normal
	15"	500 watt	8 ohm		Normal
M1201T	7/8"	50 watt	16 ohm	1.6 kHz	Normal
	12"	315 watt	8 ohm		Normal
M1502T	2"	80 watt	16 ohm	1.5 kHz	Normal
	15"	490 watt	8 ohm		Normal

a. All crossover slopes should be 24 dB Linkvitz Riley

b. The M14T must be used with a 90 Hz high-pass filter

c. The M30T must be used with a 90 Hz high-pass filter

FLYING THE SPEAKERS

All top-boxes in the Touring Series feature an integrated 3-point flying system. We recommend the Double Stud & Ring for flying track (P/N 93944003), manufactured by ATM, for use with all models. The certified load of the stud mounted into the flying track is 274 kg in 45° with a security factor 7. A comprehensive flying manual is available.

PROTECTION SYSTEM

The crossover features a double thermal protection system that is active in both passive and active modes. When power to the compression driver exceeds a safe level, the protection system increases impedance and reduces power. The audible result is lower output from the horn. When this happens, *do not increase the high frequency level on the EQ or tone control*, as this may damage the protection circuit and eventually the compression driver.

When power returns to a safe level, the protection circuit restores full signal to the horn and the audio output returns to normal.

The thermal protection circuit combines efficient protection with excellent sound quality. It is, however, not a limiter; it is designed to catch momentary surges such as microphone feedback. If the protection system is continuously engaged it will develop a “memory” and come in at increasingly low levels. If this happens, either the system is under-specified or the amplifier is clipping.

CABLES

Always use high quality speaker cables. We recommend the 2x4, 4x4 or 8x4 mm^2 Mach speaker cable. These are professional speaker cables featuring watertight rubber insulation with low sulphur content that ensures that the cable will not oxidize. The cables have low impedance, low capacitance, and are soft and easy to wind. For recommended cable lengths, refer to Table 2.

Table 2: Recommended cable lengths (dampening factor = 50)

Cable size/load	8 ohms	4 ohms	2 ohms
1.5 mm^2 (15 AWG)	15 m (50 ft.)	7.5 m (25 ft.)	4 m (13 ft.)
2.5 mm^2 (13 AWG)	30 m (100 ft.)	15 m (50 ft.)	7.5 m (25 ft.)
4.0 mm^2 (11 AWG)	60 m (200 ft.)	30 m (100 ft.)	15 m (50 ft.)

BREAK-IN PERIOD

As with all quality drivers, the drivers in the Mach T series need approximately 20 hours of operation at 70% output before they will perform fully to specifications.

SERVICE TOOLS

The following tools are required for servicing the speakers.

TOP-BOXES & STAGE MONITORS

- Woofers: ..... 4 mm hex Allen key
- Horns: ..... 3 mm hex Allen key

SUBS

- Woofers: ..... 6 mm hex Allen key

ALL MODELS

- Grill & crossover: ..... Phillips PZ2 screwdriver